

ASSESSING DEFENSE INDUSTRIAL CAPABILITIES

A DoD Guide to DoDI 5000.60

November 2013

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C1. CHAPTER 1: INTRODUCTION

C1.1. Purpose. This guidebook provides the framework and guidelines for evaluating, on a case-by-case basis, the need for Government action to preserve industrial capabilities vital to national security. A defense industrial capability is a skill, facility, process, or technology needed to design, develop, produce, repair, or maintain products used by the Department of Defense. This guidebook should be used when there is an indication that a critical industrial capability could be lost. In addition, aspects of the process outlined in this guidebook may be applicable to similar types of industrial capability analyses (e.g. a surge assessment in a situation where demand exceeds existing capability/capacity).

C1.1.1. The Department of Defense buys products and services -- not capabilities -- but every product or service represents a set of industrial capabilities. This guidebook outlines the Department's analysis process to answer:

C1.1.1.1. What industrial capabilities are essential to making the products and services the Department needs?

C1.1.1.2. Are these capabilities truly unique? Truly endangered?

C1.1.1.3. What is the best course of action for the Department of Defense?

C1.2. This guidebook is designed to be used to conduct an industry assessment when there is a determination that a capability is potentially at risk. This determination may result from a variety of sources, including being specific to a milestone review, notification by a manufacturer, a recurring problem, or through routine monitoring of industry sectors by the Department.

C1.3. This guidebook is not intended to replace normal vendor management procedures and authorities. There are many routine vendor problems that arise in program and item management: components become obsolete when manufacturers change models, companies stop making certain products, and other sources for the products must be qualified. Those problems that are currently handled through routine vendor management authorities are not candidates for this assessment process.

C1.5. Philosophy. The Department of Defense relies on market forces to the maximum extent possible to guide the development and sustainment of industrial capabilities. The Department only will consider taking action in those exceptional cases where an industrial capability, critical to meeting defense requirements, is genuinely at risk of being lost. Any recommendation for special action should be based on a thorough analysis, using the process provided in this guidebook.

C1.6. Responsibilities:

C1.6.1. **Who should use this Guidebook? When?**

C1.6.1.1. DoD managers or teams formed within and across the DoD Components.

C1.6.1.2. When there is an indication that a critical defense product or service could be lost due to loss of an industrial capability.

C1.6.2. **Analysis.** Any DoD manager may initiate a Defense Industrial Capabilities Analysis (see Part II) when there is an indication that a critical industrial capability could be lost. An ongoing review, such as a sector-by-sector, tier-by-tier assessment (including fragility and criticality analysis), may be a mechanism by which a DoD manager may identify a capability at risk. Ultimately, the DoD Components are responsible for analyzing industrial capabilities that may be at risk. When industrial capabilities affect more than one defense program or user, the DoD Components should coordinate their analyses and subsequent decisions within and across the Components, and alert the Deputy Assistant Secretary of Defense (DASD) Manufacturing and Industrial Base Policy (MIBP) of any such cross-cutting capabilities that could be lost.

C1.6.3. **Decision Authorities**

C1.6.3.1. For all Acquisition Category (ACAT) programs, all actions or investments of *less than \$100 million* annually to preserve a capability are approved by the Component Acquisition Executive (CAE) or Defense Acquisition Executive (DAE), as defined in DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPS) and Major Automated Information System (MATS) Acquisition Programs," March 15, 1996, authorized by DoD Directive 5000.01, May 12, 2003.

C1.6.3.2. For all other products or programs, all actions or investments of *less than \$10 million* annually to preserve a capability are approved by the Head of the Contracting Activity (HCA).

C1.6.3.3. For all programs or products -- ACAT and non-ACAT -- any proposed action or investment to preserve a capability with an anticipated cost of *\$100 million or more* annually requires the approval of the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) and coordination with the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy (MIBP).

C1.6.4. **Policies and Procedures.** DASD(MIBP) is responsible for the policies and analysis procedures that govern the Department of Defense's role in maintaining industrial capabilities required to carry out the defense mission.

C2. CHAPTER 2: THE PLANNING FRAMEWORK

The following is the framework in which decisions on the preservation of defense industrial capabilities are made.

C2.1. The Department of Defense is a smaller customer with changing needs. Sharp reductions in the defense budget, particularly in the procurement account, reflect our new security environment. We are buying and developing fewer types of military systems and purchasing smaller quantities of the systems we do buy. This has a direct effect on industry.

C2.2. Industry is downsizing. Consolidation and restructuring are a natural response by the defense industry when confronted with lower revenues. In many cases, this consolidation is essential to reduce the excess industrial capacity that exists and to lower the overhead costs of the products.

C2.3. The Department of Defense is adopting new strategies. The Department's challenge is to maintain superior technology and industrial capabilities at the best value. To meet this challenge, we are pursuing three strategies.

C2.3.1. Rely on commercial suppliers. The first strategy is to rely on a technology and an industrial base sustained by commercial demand, but capable of meeting defense needs. By using commercial products and services, we benefit from the cost efficiencies and technological innovations available from a much larger commercial market.

C2.3.2. Buy from the global marketplace. The second strategy is for the Department to take advantage of the cost and technology benefits offered by access to the best global suppliers. We are pursuing cooperative international development and production programs because they offer cost sharing of defense development projects, access to new technologies, and access to an international industrial base. With the proper selection of suppliers, we can gain from a significantly expanded use of foreign sources without becoming vulnerable to those same sources.

C2.3.3. Reduce defense-unique industrial capabilities. While the Department seeks to eliminate business practices that drive defense-unique industrial capabilities, capabilities needed solely, or predominately, for defense products will remain. These capabilities may have no commercial counterpart. For example, the Department of Defense requires industry capabilities to produce defense products that can meet extraordinary performance demands or operate in extreme environments. We must distinguish capabilities that are truly defense-unique from those that only appear unique because of past DoD acquisition practices.

C2.4. The Department of Defense will fund actions to preserve capabilities only when necessary. In this period of downsizing and consolidation, our objective is to ensure that industrial capabilities needed to meet national security requirements will remain available. While an industrial capability resides in a company, it is *not* a company, per se.

C2.4.1. Analysis. We do not need, nor can we afford, to invest to preserve every industrial capability or a capacity level greater than that needed to meet defense needs. The Department of Defense will not take actions based solely on the assumption that existing capabilities must be preserved. The Department of Defense will base its decisions on a case-by-case analysis considering defense needs and all possible alternatives.

C2.4.2. Funding trade-offs. When the Department of Defense decides to take a special action to preserve an industrial capability, we must include the costs in our budgets, acquisition plans, and resource allocations. DoD dollars spent to preserve capabilities leave fewer dollars available for other resource priorities, such as readiness, modernization, and soldier quality of life.

This is a step-by-step guide to performing an industrial capability analysis. The analysis process has four parts. These parts are not necessarily consecutive and the analyst will have to collect data to address the analysis issues of each part. Each part provides flowcharts to help you understand where you are in the analysis process and what you want to learn from each step. Figures 1- 4 are flowcharts of the entire Defense Industrial Capabilities Analysis process.

C3. CHAPTER 3: AN ANALYSIS IS WARRANTED

The objective is to determine the scenario causing the need for an analysis of the industrial capabilities that support the product or service of concern. Stop the analysis at any point if you decide that no further analysis or action is necessary.

C3.1. You should initiate a Defense Industrial Capabilities Analysis when you become aware of a potential problem. Concerns may be raised because the Department of Defense has stopped buying a product or service, or is reducing the quantities it is buying. An analysis is warranted only if there is an indication that the Department may lose the ability to obtain needed defense products and services. You should distinguish between normal vendor management problems, handled routinely by program and product managers within their normal authorities, and the exceptional instance when an industrial capability might be lost. Figure 1 is a flowchart of the process.

C3.2. **Routine vendor management problems do not require an analysis.** There are many vendor problems that arise in normal program and item management. Usually these can be resolved within your routine procedures and authorities. In these cases, you do not need to perform the analyses described in this Handbook.

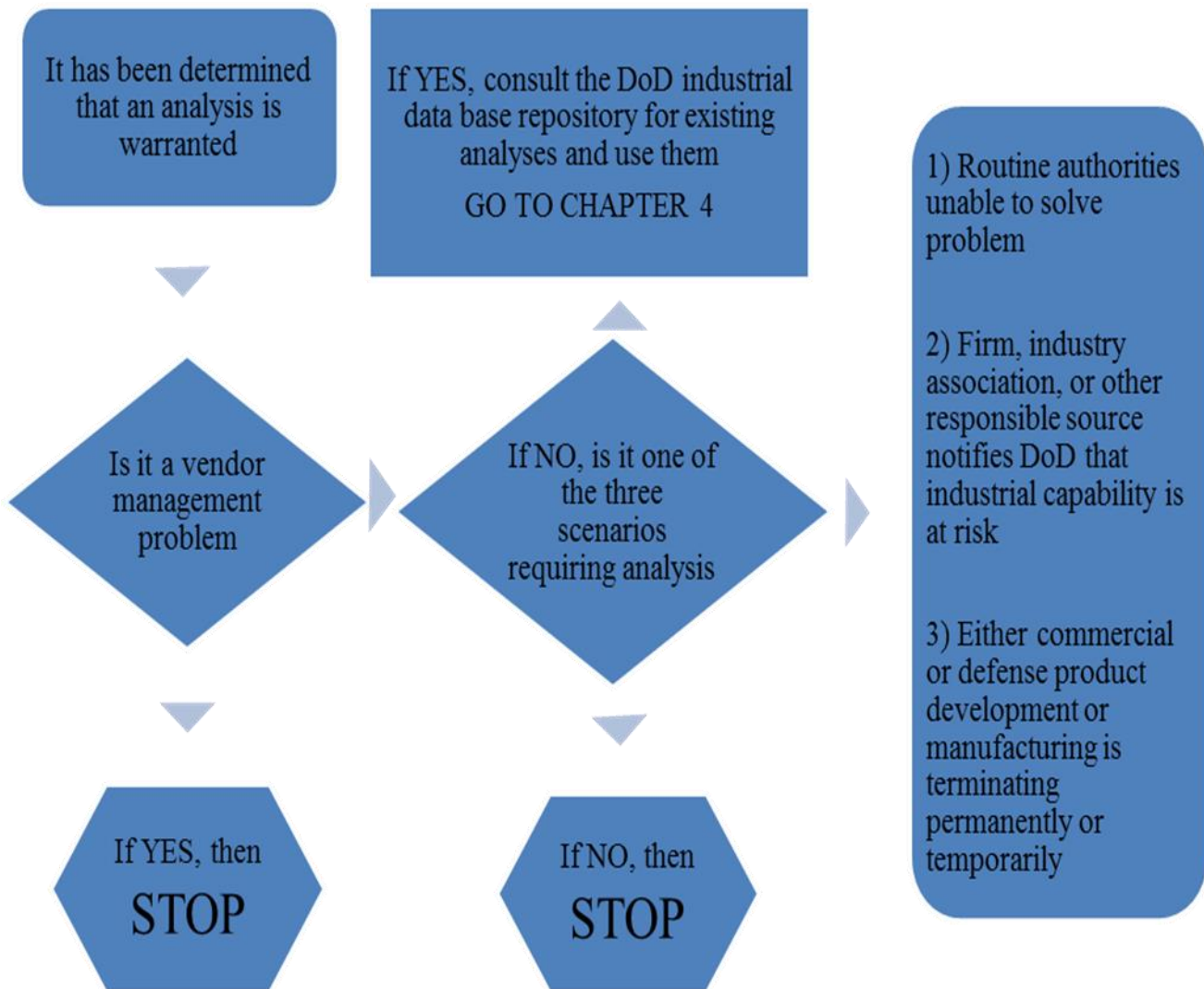
C3.2.1. **Does another supplier exist?** You have a normal vendor management problem if another supplier exists that can, and is willing to, provide the same product or service, given reasonable time and price.

C3.2.2. **Is a substitute available?** You also have a normal vendor management problem if a direct substitute product or service is available.

AN ANALYSIS IS WARRANTED

CHAPTER 3

Figure 1



C3.5. Scenarios that require an analysis.

A variety of scenarios exist for completing an analysis. The following example scenarios are provided. However, the DoD component industrial base organization should have a process in place to consolidate and vet the requirements for an analysis.

C3.5.1. The first example scenario is when DoD managers are faced with a problem in getting a critical product or service that they cannot resolve within their routine authorities and that may require special action or investment to resolve. One possible source of this identification by managers could be as a result of the screening and analytical processes of a criticality analysis.

The Army is faced with a problem in obtaining a special wire needed for the production of a missile. The sole source manufacturer of the wire has advised that the missile production rate is too low to sustain the capability and he will "close shop."

C3.5.2. The second scenario is when individual firms, industry associations, or other responsible sources warn DoD managers that an industrial capability is at risk.

Semiconductor manufacturers are reporting that they are not interested in making products to meet certain military-defined integrated circuit requirements, such as radiation hardening, unless they get a guaranteed volume of business over a certain period of time.

C3.5.3. A third scenario is when product development or manufacturing (commercial or defense) is terminating either permanently or temporarily. Managers facing program termination should assess the potential loss of industrial capability if a future DoD need for the product or capability is identified.

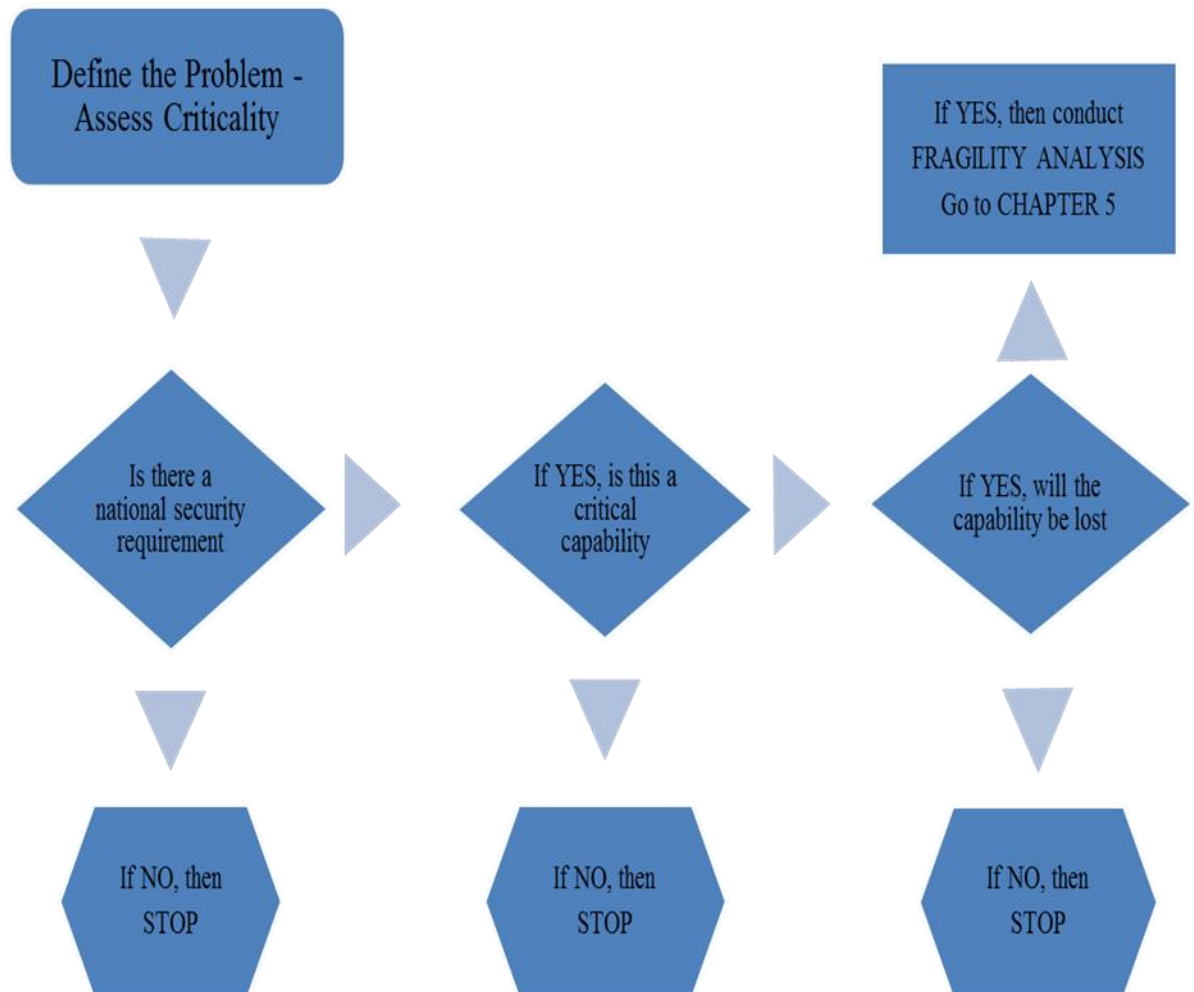
The Army is faced with a decision of whether to terminate production of its tank. The tanks are in adequate supply now, but may be needed again. The Army is considering awarding a low-rate production contract to keep the production line intact as certain components of the tank are considered fragile.

C3.6. Determine if an analysis already has been done. Before undertaking a new analysis, determine if the Component or the Department of Defense has completed other industrial analyses relating to the product, service, or capability that seems to be at risk (e.g. DoD Industrial Base Data Repository https://ibwebportal.ria.army.mil/IB_reports_studies/index.cfm). You may find that your problem has been addressed and there is no need for additional analysis. As a minimum, an already completed analysis may provide useful input for your new analysis.

DEFINE THE PROBLEM

CHAPTER 4

Figure 2



C4. CHAPTER 4: DEFINE THE PROBLEM – ASSESS CRITICALITY

Once a specific supplier or industrial capability -- for example, a skill or facility -- has been identified as being at risk, it will be necessary to tie this supplier or capability to the defense products or services it supports. It is now time to define the problem. There are then three steps to defining the problem:

C4.1. Verify the National Security Relationship

C4.1.1. Questions to ask.

Figure 2 is a flowchart of the steps involved in verifying the national security relationship. There are two basic questions to be asked at this point: 1) is there a national security requirement for the product or service, and 2) who else uses this product or service?

C4.1.2. Is there a national security requirement for the product or service?

C4.1.2.1. *The objective is to determine whether the product or service that seems to be at risk is vital to meeting current and planned national security requirements. If not, your analysis ends at this point.* The Department of Defense will only consider preserving a capability that is needed to support national security. Start your analysis by identifying the defense product or service that seems potentially at risk, then determine if the product or service is needed to meet defense requirements. If a current defense requirement is ending, is there a known or likely future need for the product or service? Defining the timeline or schedule for the product is required, even if it can only be estimated at this time.

C4.1.2.2. Broadly speaking, defense requirements -- current or future -- fall into three categories:

C4.1.2.2.1. Planned force structure and mission scenarios.

C4.1.2.2.1.1. Is the product or service necessary to meet planned military missions? In other words, is it needed to supply and equip the existing or planned force structure of the Armed Forces? Refer to the President's Budget, Future Years' Defense Program (FYDP), and strategic guidance documents (e.g. Defense Planning Guidance, Quarterly Defense Review) for information on the Department of Defense's planned force structure.

The Air Force requires satellites and associated launch vehicles to meet identified threat and mission needs and schedules. These requirements are reflected in their FYDP input.

Nerve gas antidote auto injectors have little peacetime requirement; however, the Department of Defense must have the capability to surge production to meet wartime or contingency demand. Surge requirements are included in Component Operations Plans.

C4.1.2.2.1.2. Additionally, individual DoD Component plans identify long-range needs that may be outside the FYDP.

Minuteman III solid rocket motors must be rebuilt in a planned cycle of 20 years. While in a given time period the work may not appear in the Component's budget or FYDP, there is a need for the capability to rebuild the motors when the time limitation is reached.

C4.1.2.2.2. Readiness and sustainment. Is the product or service needed to meet readiness or sustainment requirements? Will its absence affect the Department's ability to support defense systems, assemblies, or other components over the life cycle? When defense products go out of production, the Department requires post-production support for the useful life of the product. Readiness and sustainment requirements are determined based upon product repair histories and planned overhaul schedules. Refer to DoD Component inventory and weapon system program managers for this type of data.

The B-52 and B-1 bombers are out of production. However, both are still in operation and require spares, repair parts, test equipment support, data, and sustaining engineering.

C4.1.2.2.3. Next-generation defense capabilities. Is the product or service needed to support the design, development, or manufacture of next-generation defense equipment? Would its loss limit our ability to develop or field new systems? Is it needed to modernize systems or make mission-driven upgrades?

The Department of Defense is interested in developing increasingly advanced "smart" munitions, missiles, and other weapons. Capabilities such as specialized engineering and software skills and sophisticated modeling and simulation are essential to the development of affordable but superior "smart" weapons.

C4.1.3. Do others use this product or service? *The objective is to identify all users for the products and services of concern. If appropriate, you should establish a DoD team to participate in or coordinate the analysis.* Industrial capabilities needed to support one product, service, or program are very often needed by others. The Department of Defense cannot afford to make duplicate investments to preserve identical or very similar industrial capabilities. To understand the full national security requirement, you need to identify the users and their demand for the product or service. When the product, service, or capability of concern supports more than one defense program or user, establish a cross-DoD analysis process – perhaps through the Joint Industrial Base Working Group (JIBWG).

C4.1.3.1. Define total demand. Define total demand, including DoD and world-wide demand. If you initiated this analysis with a specific capability as a focus, you again need to tie it to the product or service it supports. Is the defense capability in question needed to support other products, services, or programs?

C4.1.3.1.1. DoD Demand. This includes other defense users of the product

or services, both within and across Components. What is the total DoD demand for the products or services, in terms of total quantities required, quantities on order, dollars, and development or production timelines?

C4.1.3.1.2. *World-wide demand.* What is the Department of Defense's relative share of the global product or service market? Who are the non-DoD users? If the Department of Defense is not the only or predominant user, then the capability is most likely not at risk. If the Department's product is a variation of a more widely-used product the capabilities needed to provide both products are usually very similar.

C4.1.3.2. **Establish a cross-DoD analysis.** Establish a cross-DoD analysis by either coordinating a team of representatives from all affected DoD managers or by designating a lead Service or Agency. (For assistance in designating a lead Agency, see the *Help* box below.) If you can identify other Government users, such as the National Aeronautics and Space Administration or the Department of Energy, coordinate your analysis with them.

The Services have a need for high accuracy missile guidance systems. Any analysis of the capabilities to manufacture guidance systems should be coordinated among the Services. Further, the industrial capabilities needed to produce guidance systems for one missile may be similar to those needed for other defense missile guidance systems. These "similar" capabilities should be explored in the joint-Service analysis.

NEED HELP? If you are unable to identify the other defense products or other users, elevate the need for analysis to a higher level of management. You may also contact MIBP (<http://www.acq.osd.mil/mibp/>)

C4.2. Assess Criticality of the Industrial Capability

C4.2.1. **Questions to ask.**

C4.2.1.1. What capabilities are needed to provide the product or service?

C4.2.1.2. Do any of these capabilities require further analysis?

C4.2.2. **Define the most critical capabilities needed to provide the product or service.**

C4.2.2.1. Define the many capabilities that are needed to provide the product or service of concern. In some instances, defining all the capabilities may be a relatively easy and limited task. For example, if a company advises the Department of Defense that it will no longer provide a particular minor assembly, you may be able to identify rapidly the small set of capabilities that are needed to develop or produce the product.

C4.2.2.2. However, in many cases the product in question will be a very complex

end item, subsystem, or set of assemblies. In these cases you will need to do much more extensive work to define all of the capabilities involved and target your analysis to the most critical capabilities. A work breakdown structure, commonly used in acquisition programs, is a good starting point.

The Department of Defense has been using a particular type of engine that is similar to a commercial engine design. However, the DoD engine incorporates subassemblies (e.g., hot section) uniquely adapted for defense applications. The DoD production contract is ending. In assessing the capabilities that may be lost, the DoD manager delineates the types of capabilities used to develop, produce, and support the engine.

C4.2.2.3. Type of Capability. Moreover, you need to define capabilities in terms of type of capability (skills, knowledge, facilities and equipment, processes, or technologies).

The production of solid rocket motor fuel depends on certain human skills that are difficult to document and to precisely replicate. Proper execution of the fuel mixing process is critical because of the highly explosive nature of the materials. These skills are an important capability for producing the fuel.

The following factors should inform the criticality determination:

C4.2.2.4. Defense Unique. Is a product, service, or skill needed predominantly for defense products/use. There may be no, or limited commercial counterpart. In general, there are limited or no substitutes for the product, service, or skill.

C4.2.2.5. Relevance to Department. The capability is used across multiple platforms or military services. The greater the number of platforms and military services using the same product, service, or skill, the greater the impact if the capability is lost.

C4.2.2.6. Skilled Labor Requirements. Is specialized knowledge and experience required to integrate, manufacture, and maintain a product or service? Could the loss of the skill jeopardize future delivery of the product or service?

C4.2.2.7. Design Intensive Activity. Is the degree to which deep knowledge of the system architecture is required to design or produce an alternative to the product or service under consideration. The loss of knowledge of system architecture would limit DoD ability to modify, upgrade, or design the next, next-generation system.

C4.2.2.8. Availability of Alternatives. Are there cost-effective alternatives available to meet DoD needs without degrading mission performance. If no alternatives are available, the risk to DoD increases (higher cost, schedule delays, and/or capabilities tradeoff may be needed).

C4.2.2.9. Level of Future Demand. Will any estimated or expected change in demand for a capability (product/service/skill) during a pre-determined period of time (usually

five years) impact the supply of the capability.

C4.2.2.10. Geo-Political Climate and Impacts of Non-U.S. Sources. Inter-governmental relationships could affect DoD's ability to reliably obtain products/services/skills from foreign-sourced suppliers. A foreign source is one that is outside of the U.S. industrial base. Canada is, by law, considered a part of the U.S. industrial base. Foreign sources may pose a risk if a critical capability is available from a region with political instability, and when alternatives are limited.

C4.2.2.11. High Reconstitution Cost. This exists if the cost of restoring production capability for a product/service/skill exceeds the cost of maintaining the capability.

C4.2.2.12. Lead Time. During periods of tight supply, it is possible that the order-to-deliver lead time for an item exceeds the customer's required timing for the need of the item. If such a situation results in chronic and sustained schedule delays, this is an indicator of possible industrial base issues when the capability is shared across DoD programs.

C5. CHAPTER 5: ASSESS THE FRAGILITY OF CRITICAL CAPABILITIES

The objective is to determine whether a capability, uniquely required to provide defense products and services, is truly in danger of being lost. If it is not critical, or if it is not in danger of being lost, further analysis is unnecessary.

Once it has been determined that an industrial capability is needed to provide a defense product or service, and is critical, determine if the capability is really at risk of being lost.

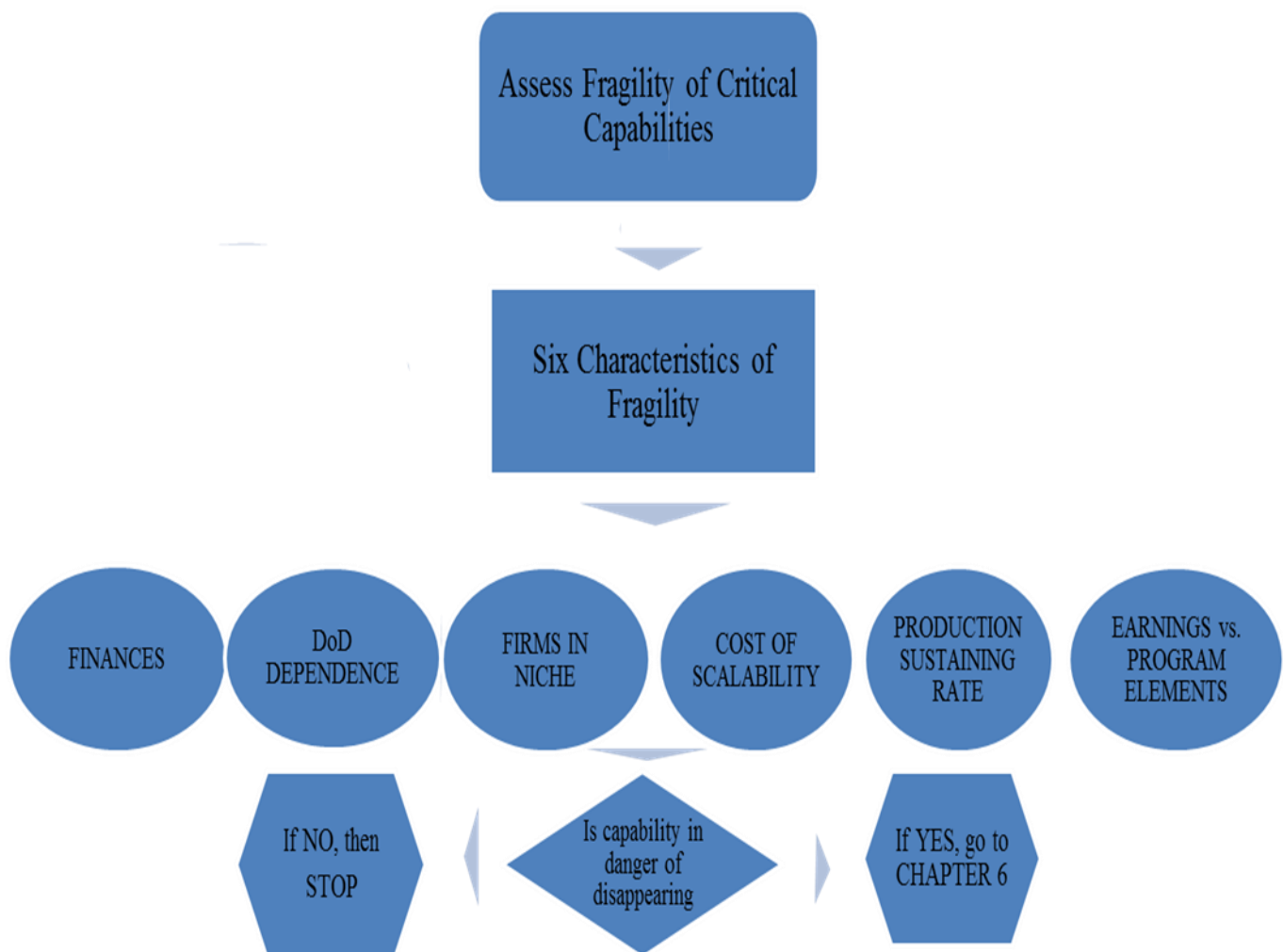
There are six fragility characteristics that should be considered in assessing the risk of losing the capability – see figure 3.

C5.1. Financial Outlook. This is a snapshot of the firm's stability. It is measured through specific indicators, such as growth/diversification, business opportunities, and risk. If a firm is stable, the risk of an inability to provide a capability to DoD is less.

ASSESS FRAGILITY

CHAPTER 5

Figure 3



C5.2. DoD Dependence. This refers to the mix/percent of a firm's products and services provided to DoD versus those provided to the commercial market. The greater this percent is skewed toward DoD, the more the firm depends on current, and possibly future, defense procurement (i.e. a higher risk). Conversely, the less a firm depends upon DoD, there is a possibility of the firm exiting the DoD related business.

C5.3. Firms in Sector. This is the number of firms that participate in a given market that is under reviews. The number of firms indicates the level of competition. The more firms active in a market, the greater the likelihood that DoD can find suppliers for critical products/services/skills.

C5.4. Production Scalability Cost. This refers to the unit cost fluctuations caused by changes in production orders or the services provided. A high variability would mean that a reduction in demand can have a negative impact in the unit cost and, therefore, DoD acquisition cost.

C5.5. Minimum Sustaining Rates (MSR). MSR is defined as the lowest level of utilization necessary to ensure the continued viability and vitality of a given industrial capability. An MSR incorporates elements of both quantity and how production of that quantity is integrated over time within the supply chain. Firms operating near their MSR have a higher risk of exiting a business segment as the demand for products or services decreases.

C5.6. Diversity of Firm's Earnings. The term means the number of distinct products and customers that are the sources of the firm's revenue. Limitations on either the number of product lines or customers could reduce the firm's ability to remain viable.

C5.7. Validate the Need for Government Action

C5.7.1. No real financial problem. The following examples are typical situations where there is minimal or no risk to financial viability.

C5.7.1.1. The company is making profits that are acceptable when compared with other business units, firms, or similar industries. Profits may well have declined but still should not represent a major concern. This may happen for a number of reasons, such as:

C5.7.1.1.1. The business unit could still be performing well when compared to the corporation as a whole or to other companies in the same market; or,

C5.7.1.1.2. The entire market may be at a cyclic low point.

C5.7.1.2. While there is a short-term profitability problem, the situation is temporary and future sales should be sufficient to sustain the company. For example, a new contract is about to be awarded.

C5.7.1.3. The business may be experiencing a downturn from which recovery is expected (e.g., a cyclical industry). Sales and revenue are expected to turn around due to natural market forces.

C5.7.2. Company should take action. The following are situations where the financial problem is real, but within *the company's responsibility* to correct.

C5.7.2.1. As sales volume has decreased, the company has not adequately controlled the ratio of indirect to direct costs, thereby reducing profits. Assess whether indirect cost reductions can be achieved to reduce the high overhead costs and increase profitability.

C5.7.2.2. The company has not upgraded its facilities, modified its processes, or applied available new technology to reduce costs. Investment may have to be made in more efficient production processes, and older production lines may have to be shut down.

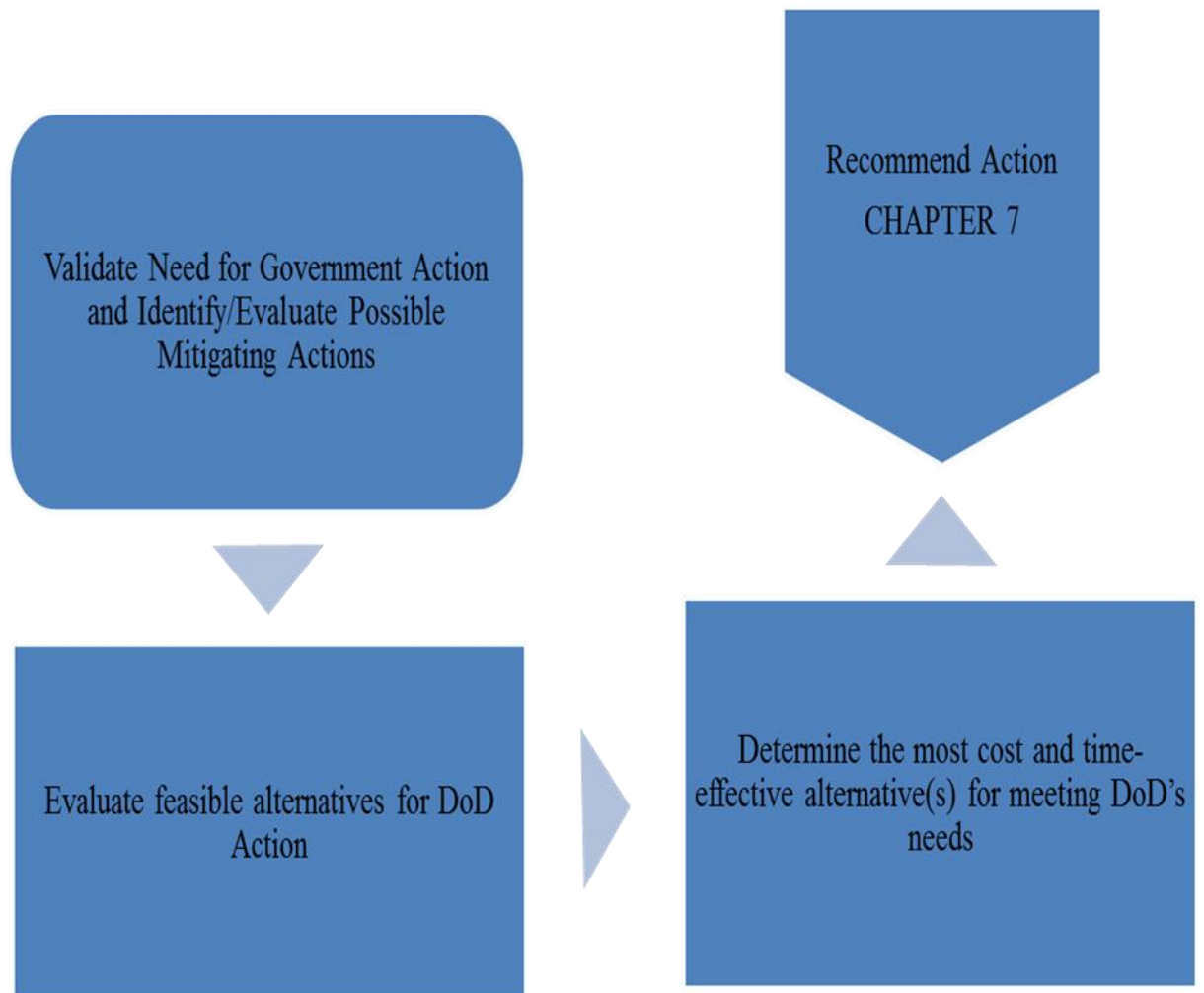
C5.7.2.3. The company is seeking, investment, loans, or cost reimbursement from the Department of Defense prior to exhausting corporate and outside sources. If future profitability is contingent on refinancing, ascertain commitment of lenders for a bank loan or underwriters for financing. Confirm that the cost of debt will be lower and will enable the company to become profitable.

C5.7.3. Government action should be considered. If the financial problem is real and *Government action* should be considered to maintain the company's desired capability, use Chapter 6 of this guidebook to assess potential alternatives available for Government action.

DETERMINE NEED FOR AND IDENTIFY ACTION BY GOVERNMENT

CHAPTER 6

Figure 4



C6. CHAPTER 6: IDENTIFY AND EVALUATE POSSIBLE MITIGATING ACTIONS

The objective is to determine and compare the cost, lead-time, consequences, and risks of pursuing the alternatives available to the Department of Defense.

If a critical capability is determined to be truly at risk, then it is necessary to examine and compare all reasonable alternatives for DoD action, including the option of taking no action. Figure 4 illustrates the sequence of events in this phase of the analysis.

The Department of Defense will only take action to maintain an industrial capability if the time or cost to regenerate that capability, once lost, would prohibit the Department from meeting its mission needs. Once an estimated DoD requirements timeline for the product or service this capability supports has been established, then the goal in this evaluation is to determine which alternative or alternatives best meet the Department's needs, given time and cost. The following paragraphs describe alternatives and the considerations for analysis, and provide examples of situations where the alternative is an appropriate choice.

This list is not exhaustive; other alternatives should be considered.

Examine each of the alternatives using the procedure outlined below. If a given alternative is unrealistic, identify it as such.

C6.1. No Action

C6.1.1. If DoD takes no action to preserve the capability, is it feasible to regenerate the capability? What will happen if the Department of Defense takes no action? This alternative means choosing to take no action and make no investment to extend or preserve any part of the capability. This alternative may be particularly appropriate in product areas for which the DoD near-term requirement is terminating and future requirements are unclear, or would likely be met by a much altered configuration.

C6.1.2. **Considerations:**

C6.1.2.1. Restart cost, time, and technical issues. The analysis of this option should identify and quantify the cost, time, and technical implications of regenerating (or restarting) the capability at some point in the future, given that all DoD programs or funds have stopped. Since capabilities exist in support of products, it is necessary to assess restarting the capability as part of an activity (e.g., engineering or production of a given product).

C6.1.2.2. Useful life. Estimate the rate at which the capability is expected to decline. When will the capability be completely lost? You also should consider the utility of the capability given the pace of technological change and changes to the DoD mission. When will the capability begin to become outdated?

C6.1.2.3. **Retaining future product capability.** If production is terminating, you need to examine future research and development (R&D) capabilities. Are there DoD R&D programs or commercial product demands that will sustain engineering skills and specific manufacturing knowledge?

C6.2. Foreign Sources

C6.2.1. **Does any foreign supplier offer a product or capability that can be substituted for the one at risk?** Although the original manufacturer may have been domestic, viable alternative sources may exist if the market is more broadly explored. Reliable foreign suppliers are usually acceptable, and in fact are encouraged to allow the Department to obtain a wider competitive cost and technology base. Foreign dependence does not mean foreign vulnerability. The Department of Defense seeks to use foreign sources wherever advantageous and within the limitations of the law. The Department has reciprocal procurement agreements with many nations in which each party agrees to consider the other as a potential supplier for defense purposes.

The Department of Defense relies on foreign suppliers to play a major role in many weapon system acquisitions.

C6.2.2. If you have not used or even solicited foreign sources for your product or service in the past, you may have to research potential feasible firms. Work with your procurement officer to perform this research and to analyze this alternative.

C6.2.3. **Excluding foreign sources requires special approval.** If you believe that foreign sources should be excluded from a solicitation, you must obtain approval for the exclusion before proceeding with the solicitation. One example might be for mobilization reasons. The decision to use other than competitive procedures, or to exclude foreign sources from acquisition solicitation for mobilization reasons (that is, exclusions under FAR Part 6.302-3(a) and FAR Part 6.202(a)(2), must be approved by the official prescribed by FAR Part 6.304 and by the USD(A&T) for contracts over \$85.5 million. Each CAE has instituted a process requiring formal approval of domestic source restrictions for procurements less than \$50 million.

C6.2.4. **Domestic Source Restrictions.** What exceptional conditions might warrant excluding foreign suppliers?

C6.2.4.1. Foreign sources may pose an unacceptable risk when there is a high "market concentration" *combined with* political or geopolitical vulnerability. A sole-source supplier existing only in one physical location and vulnerable to serious political instability may not be available when needed. **Note:** Market concentration alone is not a reason to exclude foreign sources; there-must also be a credible threat of supply disruption due to political instability. Sheer physical distance from the United States is *not by itself* a risk that merits

foreign source exclusion.

C6.2.4.2. Suppliers from politically unfriendly or anti-American foreign countries, as defined by statute or U.S. Government policy, are not used to meet U.S. defense needs.

C6.2.4.3. A U.S. source may be needed for technologies and products that are either classified, offer unique warfighting superiority, or could be used by foreign nations to develop countermeasures. However, the Department does have agreements with many allied and friendly nations for safeguarding classified military information. These foreign sources cannot be automatically excluded on the basis of a need to protect classified or unique technologies or products; this must be determined by individual circumstance.

Stealth technologies involve control of radar, infrared, or other signatures to reduce an adversary's detection of U.S. weapon systems. Technology or product transfer to foreign firms could jeopardize U.S. superiority in stealth technology. There are a number of statutory restrictions on the Department, such as 10 U.S.C. 2533a and b that prevents it from buying particular products from non-U.S. sources, for example, textiles and specialty metals.

C6.2.4.3.1. Suppliers that cannot or will not provide products for military applications for political reasons are not feasible sources.

C6.2.4.3.2. As noted above, in some instances, the Department of Defense may be required by law to purchase a particular product (e.g. specialty metals) from U.S. sources only. The Department is required by law to purchase a particular supply only from U.S. sources.

C6.3. Substitutes

C6.3.1. Is there a substitute for the industrial capability, or for the product the capability supports? Simple, direct substitutes for a common part or material are typically adopted as a matter of course as a part of a DoD manager's routine "vendor management." This alternative examines finding a substitute when a simple part or ready source substitution is not an option. You should determine if other DoD programs, or industry products, employ a different capability or produce a product that could serve as a substitute to meet your needs. You should consider at least three approaches to substitution:

C6.3.1.1. A substitute for the industrial capability. Even if the capability at risk appears to be unique, investigate the possibility that another industrial capability may be substituted for the current capability. Look beyond the industrial capability as defined today and try to find a capability that might replace it (see C6.5).

A particular defense transport vehicle is projected to go out of production. The Department is concerned that the skills and materials needed to manufacture the unique, heavy-duty transmission

will be lost. The DoD manager finds that manufacturers of some commercial heavy transport vehicles employ the same technical skills and materials in manufacturing transmissions as those needed to manufacture the DoD vehicle transmission.

C6.3.1.2. A substitute for the product. Investigate the possibility that a replacement product could provide the same defense mission capability. Try to find a substitute for the product levels of assembly; i.e., if you cannot find a substitute component can you find a substitute for the next higher assembly?

The manufacturer of a certain type of gyroscope used by the Department of Defense is warning that he may have to terminate his defense product line due to low quantities. If production ceases, this particular type of gyroscope technology will be lost. The DoD manager determines that a different type of gyroscope, based upon laser technology, can be used as a substitute for the gyroscope technology that is threatened.

C6.3.1.3. A modified or nearly perfect substitute. Investigate the possibility of modified or nearly perfect substitute for the capability or the product the capability supports. Most substitutes for the product or capability will require some alteration to meet DoD requirements, or some compromise in meeting form, fit, or functional requirements. Determine if a modified capability or product, or a nearly perfect substitute offering different but sufficient performance, could satisfy your need. These substitutes may be more cost effective than other options, even though they may entail longer delivery times, additional cost for qualification or logistics, or some performance degradation from the current product.

A landing gear used on a DoD cargo aircraft is built to a DoD specification and has some unique performance requirements. The landing gear production is ending but the Department of Defense will need to procure them again in low quantities in the future. Working with the user and the product engineers, the DoD manager is able to revise certain of the unique performance requirements so that another existing landing gear can be used with minor modification. The Department pays to modify and requalify the new gear.

C6.3.2. Evaluating substitutes. You must determine whether the Department's requirements can be met by a substitute industrial capability or product. This requires a technical assessment in which you:

C6.3.2.1. Analyze performance criteria. Perform an engineering analysis of the technical drawings, data, and performance specifications of the product currently in use. Using performance parameters that describe or drive the current capability, identify how similar capabilities or products might meet, or fall short of meeting, DoD needs. Work with the military user to determine where changes in performance parameters would be acceptable.

C6.3.2.2. Qualify the substitute item. After identifying a potential substitute, you may also need to demonstrate the performance of the substitute capability or product in factory and operating environments.

C6.3.2.3. Compare costs fairly. Be sure to compare the cost of the proposed substitute product to the likely *future* cost of the product it would replace. Product costs frequently begin to rise when capabilities are at risk. Costs to test or qualify the new substitute product for use should also be included.

The DoD manager estimates the price for the laser technology gyroscope and the expected price of the next buy for the gyroscope going out of manufacture. (The old gyroscope has been increasing in price as the production quantities have been decreased over time.) The analysis includes the cost of tests to qualify the new gyroscope's performance.

C6.4. Buy-out to Meet Future DoD Needs

C6.4.1. Is it economically or technically feasible to make a "life-of-type" buy of the product? A life-of-type buy is the purchase and storage of anticipated lifetime quantities of the product that the capability supports. To analyze this option:

C6.4.1.1. Determine technical limitations. First, determine if a life-of-type buy is a practical alternative and is legally authorized. It is not practical for products that have shelf-life limitations or other technical characteristics that make long-term storage or delayed consumption undesirable.

Nerve gas antidote injectors, needed to support some types of military conflicts, have a limited shelf life due to drug and packaging degradations over time. Therefore, they cannot be purchased in "lifetime" requirements quantities. A viable supply source must be available when it is needed.

C6.4.1.2. Determine requirements and costs. Work with all DoD users of the product to project a realistic requirement quantity. It is very difficult to accurately project the lifetime quantity requirement for a capability; try to understand the users' assumptions in defining their demand. The cost of this option includes not only the direct cost to procure the total quantity, but the cost of long-term storage, management, and the time value of money.

C6.4.1.3. Address fiscal limitations. The Under Secretary of Defense (Comptroller) (USD(C)) considers making life-of-type buys as "buying in advance of needs," a fiscal practice that is strongly discouraged. However, completing the analysis outlined in this Guidebook provides the type of data required by the USD(C) to authorize making a buy of at least some portion of the lifetime quantity.

When an electronic component becomes unavailable and no substitute item or source can be found, Defense Logistics Agency supply chain inventory control managers may work with users to make a lifetime requirements computation. When properly justified, they seek Comptroller authorization to buy some portion of the lifetime quantity, for example, 2 - 3 years' worth. During the subsequent 2 - 3 years, they work to find another solution to the problem.

C6.5. Technology Solution

C6.5.1. Is there a viable R&D or technology-based alternative? Could a technology or product under development provide a substitute for a capability or product?

A new technology solution might offer a feasible alternative to preserving an existing capability, even if it only partially meets the current need. A technology solution could be a substitute for a capability, for example, an advanced technology approach to manufacturing an item that promises to replace the current "at risk" manufacturing process. It could also be a replacement for the product or system that the current capability is used to support.

The type of integrated circuits used on the electronics boards of an aircraft radar were becoming obsolete in increasingly large numbers. The weapon system manager chose to employ a technique where a special type of new technology part emulated the old parts' functions. This eliminated the need for making life-of-type buys of the old parts.

C6.5.2. Analysis considerations. Work with the R&D community -- inside or outside the Department of Defense -- to explore and evaluate potential solutions. Determine whether a proposed technology solution adequately addresses DoD performance specifications. Since the technology capability probably requires development and risk, the military user must help determine if the cost, schedule, and performance implications of the technology solution are acceptable.

A raw material used to build a very high-energy propulsion system is becoming unavailable. An analysis of the capability (the raw material) determined that no other material was available that could meet the performance requirements. The DoD manager works with DoD materials laboratory personnel to assess whether a new technology material might be available that, with demonstration, could meet the projected need.

C6.6. Smart Shutdown

C6.6.1. Should the Department of Defense invest in a "smart shutdown"? If we do, will restarting the needed production or development activity at a later date be faster or more effective? Smart shutdown means purposely preserving certain elements essential to reproducing a product or service, while allowing the current development or production activity to stop. Examples of actions to preserve certain elements include storing and maintaining equipment and tooling, cataloging and tracking personnel skills, videotaping and photographing processes, stocking critical raw materials, and creating computer-based models of the product to be reproduced.

C6.6.2. DoD programs are usually terminated because there is no longer a requirement for the current "version" of the product. Often, the Department of Defense will want to buy a significantly altered, next-generation version in the future.

The Navy's torpedo production requirement is ending soon. There is no anticipated requirement for full production for at least 10 years. The Navy evaluated investing \$15 million in "smart shutdown" actions, including buying production process specifications and video taping processes. They ultimately decided not to invest the \$15 million because the next torpedo designs will be very different and use few of the current processes.

C6.6.3. However, if the current or a similar product or capability may be required in the future, smart shutdown investments should be considered.

C6.6.4. **Analysis considerations.** There are two important analysis issues for smart shutdown and restart.

C6.6.4.1. Can you reasonably expect to successfully restart the activity to meet a future defense requirement in time, and at an acceptable cost?

C6.6.4.2. Is investing to preserve certain elements more effective than simply taking no action at all? Assess the costs of actions relative to the projected benefits of preserving these selected elements. Define how investing now to preserve certain elements will make restarting the activity later either less costly or more technically feasible.

The estimated time to go from a completely "cold" Abrams tank production base to a full-surge production rate is several years. Based upon analysis, DoD managers determined that this lead-time could be reduced by as much as a third by employing "smart shutdown." Smart shutdown elements applied in the analysis included storing production equipment, maintaining registers of uniquely skilled personnel, and stockpiling certain tank components.

C6.7. Maintain the Current Capability

C6.7.1. Should the Department of Defense invest to sustain a current development or production activity in order to preserve a capability? In this option, you will assess taking an acquisition action to preserve a capability by preserving the development or manufacturing of a current product or service. You should only consider this alternative if you have a known or projected future requirement for the current product or service. Possible actions include special DoD acquisition actions to sustain the following:

C6.7.1.1. Unique production capability that is at risk, such as:

C6.7.1.1.1. Issuing a "bridge" contract to maintain a predetermined production rate across a "requirements gap."

C6.7.1.1.2. Stretching out production quantities to keep a production line going at a production rate just sufficient to keep it "warm," that is, to keep critical capabilities intact.

C6.7.1.1.3. Directing spare parts or maintenance procurements to the

production supplier to keep certain types of production skills intact.

C6.7.1.2. Engineering or research capability at risk, such as:

C6.7.1.2.1. Initiating new technology development or prototyping programs.

C6.7.1.2.2. Continuing or initiating sustaining engineering contracts, system updates, or a modification program.

In trying to determine whether to fund a special "bridge contract" to support a missile that will be needed again in 3 - 5 years, the DoD manager is considering a contract for production of only those components needed to support truly unique capabilities. He may buy the highly crafted nozzles with unique coatings, as they are not required by any other product. He is not considering buying the entire missile.

C6.7.2. Scope of action needed. The capabilities at risk may only be a few among many capabilities that make up a product. Any special acquisition action being considered needed should be focused on how best to preserve the needed capability. This may not necessitate production or engineering work for the entire product, or for the same product that the capability currently supports.

C6.7.3. Determining the needed level of effort. You need to perform an analysis to determine the appropriate pace (e.g., rate of production, level of engineering activity) required to sustain the needed capability, given the constraints of DoD resources.

C6.7.3.1. Technical analysis. Is the needed capability endangered because any reduction or interruption in the capability will lead to its loss? If your near-term requirements are too low to sustain the technical viability or accuracy of the capability, you need to perform a technical analysis. This analysis must examine the specific technical aspects of the capability that make it volume, rate, or time sensitive. Try to define the risk that is associated with variations in this rate. You need to determine the lowest possible rate or level of effort that can be performed and yet still maintain the viability of the needed capability. Paragraph C4.3.3. provides details of this type of analysis.

C6.7.3.2. Break-Even analysis. If the capability is endangered due to supplier financial performance or product line profitability, you will need to complete a Break-Even analysis. A Break-Even analysis examines a business operation's fixed and variable costs relative to volume to calculate the point at which there is neither profit nor loss. The results of this analysis will help you to understand the rate or level of activity that the Department may want to consider funding if the current capability must be maintained. It is recommended that a skilled cost or financial analysts assist in this analysis.

C6.8. Additional Considerations for DoD Action. The analysis has thus far focused on comparing the costs and risks of feasible alternatives, once you have determined that a needed

capability is endangered. There are other types of actions that might aid in preserving a capability, but that are more difficult to quantify or control. In some cases these actions require work with individual suppliers. Others are global actions to address an entire product area. Can you preserve the needed capability by one of the following measures.

C6.8.1. Contract changes. Can the Department of Defense make a contract change to alter delivery, payment, or other conditions such that the supplier's business problems are eased? Is it possible to use multi-year contracts or other purchase planning tools to provide the supplier a more stable operation?

C6.8.2. Procurement relief or restriction. Can the Department eliminate procurement restrictions that may be exacerbating the loss of capability? Or impose a restriction that limits DoD procurement of certain products to endangered suppliers?

C6.8.3. Export assistance. Can a capability be preserved by increased sales by the current suppliers of the same product or similar products to users other than the Department of Defense? If foreign sales are blocked due to a Government action, e.g., a trade barrier or an export license, could the Department help?

C6.8.4. Policy relief. Can the Department eliminate policy that may be exacerbating the loss of capability? For example, are policies preventing you from soliciting from a wider set of potential sources of supply?

C7. CHAPTER 7: RECOMMEND A COURSE OF ACTION

C7.1. If you want to recommend an action or investment, take the results of your analysis, in the form of a Summary Report, to the designated decision authorities. Decisions to take actions or make investments of *less than \$100 million* annually to preserve industrial capabilities are made by the CAE or DAE for ACAT program, or by the HCA for all other programs. USD(A&T) approval and DASD(MIBP) coordination are required on actions valued at *\$100 million or more* per year. DASD(MIBP) will also ensure appropriate OSD staff coordination for proposed investments.

C7.2. Your Summary Report should address cost, schedule, effects on performance and pertinent qualitative considerations. You need to define how and when the action would be incorporated into the budget and, if possible, identify budget offsets. *A copy of your Summary Report must be provided to DASD(MIBP).*

C7.3. If you recommend action or investment for more than one year, you will need to revalidate your analysis each year. As time passes, DoD requirements and defense industrial capabilities change. Given these changes, you may not need to take action in future years after all.

DEFINITIONS

Defense Industrial Capabilities - the skills and knowledge, processes, facilities, and equipment needed to design, develop, manufacture, repair, and support DoD products. Defense industrial capabilities include private and public industrial activities.

Defense Unique - Some industrial capabilities incorporated into the defense supply chain are widely available in commercial markets, while others are uniquely useful to the military.

Critical – A critical capability at a facility is one that, if lost, cannot be readily assumed by another facility without significant, adverse effects to cost, schedule, and/or performance. It is often a capability which is defense unique and for which there is not a substitute and it is typically used across multiple platforms and/or military Services. In addition, specialized knowledge and experience may be required in order to integrate, manufacture, and/or maintain this product or service.

Domestic – includes the United States and Canada (key is where product/service is produced/performed)

Single Qualified Source – other acceptable suppliers are readily available to be so qualified

Sole Source – no other supplier has the needed capability

Normal Vendor Management – Any activity required to meet customer service, quality, cost, and satisfaction goals; and select, as well as manage third party companies (vendors/suppliers) to meet consistently these goals.

DoD Industrial Base Repository – a database of U.S. Government sources of data, reports, and subject matter experts (https://ibwebportal.ria.army.mil/IB_reports_studies/index.cfm)